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LIFE ANNUITIES

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The primary function of the life annuity is to insure that a given sum of money will produce a life income larger in amount than could be safely secured through the channels of ordinary investment. The regular life annuity contract is a promise to pay, in consideration of a single cash sum, a fixed amount periodically during the lifetime of a designated person, called the annuitant. Annuities in practice are paid yearly, half-yearly, quarterly or monthly.

The periodical payment yielded by a given sum invested in an annuity is larger than the return through the channels of regular investment, for the reason that each annuity payment consists of interest and of a portion of the principal of the invested fund. If the length of life of the individual could be exactly foretold, he could establish his own annuity fund. He would be able to use a definite portion of the principal each year with assurance that the fund would not be exhausted during his lifetime. For example, if a man knew that he would live exactly ten years from a given moment and if he knew that during that period he could realize exactly \$4.50 for each \$100 invested in the regular manner, he would find by a simple computation that each \$100 applied as an annuity would yield \$12.64 at the end of each year for ten years. Each yearly payment would contain a portion of the principal as well as interest. At the expiration of the ten years the last cent of principal would have been withdrawn.

Because of the uncertainty of life for the individual, and, on the other hand, of the comparative certainty of the average mortality rates that will be experienced by a large group of individuals collectively, annuities are made possible through the coöperative association of annuitants into groups, sufficiently large to insure the operation of the law of average. In practice, this coöperative association is made possible by the insurance companies which

establish annuity funds and sell annuities to the public. It is the purpose of the present article to discuss in a non-technical manner some of the problems that arise in theory and practice in connection with annuities and to portray some of the developments that have come about in recent years in the application of annuities to the needs of the public.

COMPUTATION OF ANNUITY RATES

To the layman, the calculation of the annuity premium is presumably based upon the so-called "Expectation of Life" of the annuitant. That is to say, if the mortality table which forms the basis of the calculation indicates that the expectation of life is a certain number of years, it is assumed that the true annuity premium is the present value of a series of annuity payments extending for exactly that number of years. A calculation of this nature will, it is true, yield a rough approximation to the true present value of the life annuity, but that is all. It can be demonstrated that the method always *overstates* the annuity value. In practice it is never employed for the scientific computation of rates. In fact, to the actuary, the expectation of life is hardly more than of academic interest. He may now and then employ it to compare the relative characteristics of different mortality tables, but for the scientific computation of monetary values, *never*.

The correct method of computing annuity premiums is essentially as follows: The mortality table, upon which the computation is based, consists fundamentally of a series of numbers, showing how many persons out of a given number alive at the youngest age in the table, survive to each age throughout the possible range of life. Given, therefore, a large group of persons all of the same age, the mortality table renders it possible to forecast how many of the group will be alive one year hence, two years hence, three years hence, and so on until all of the members of the group have passed away. If, therefore, a promise should be made to pay a yearly annuity of a dollar to each member of the original group, it could be foretold how much would have to be paid at the end of the first year to those surviving at that time, how much would have to be paid at the end of the second year and at the end of the third year, and so on throughout the number of years covering the possible span of life of any of the members of the group. This

series of payments may be compared to a serial bond issue maturing in definite amounts throughout a period of years. And just as the banking house computes the present value of the principal payments under the serial bond issue, so the actuary computes the present value of the series of annuity payments that will be made to the members of the annuity group. Dividing the present value of the complete series of future annuity payments, by the original number of members of the group, he arrives at the true present value of the life annuity on the basis of the mortality table employed and of the rate of interest assumed in determining the present value of the future payments.¹

It will be of interest to compare the present value of the life annuity computed by the erroneous expectation-of-life method, with the true present value. Employing the Carlisle Table of mortality as the standard, we find that at age 35 the expectation of life is 31 years. On a 4 per cent basis the present value of an annuity of \$1,000 payable yearly for 31 years, is \$17,588. The true value of the life annuity of the same amount at age 35, on the basis of the Carlisle Table and 4 per cent interest, is \$16,041. At age 75, where the expectation of life is 7 years by the Carlisle Table, the erroneous value of the 4 per cent life annuity of \$1,000 payable yearly is \$6,002 and the true value is \$5,239. It is strange that in so many of our courts, the expectation-of-life method is still retained for the calculation of claims where life annuities are involved. One would have surmised that the error therein involved would not have remained unchallenged and that a demand would have arisen for the abandonment of a method which is so unfitted for scientific computation.

ANNUITY RATES IN AMERICA AND IN GREAT BRITAIN

At this point it will be instructive to set out in tabular form the percentage yearly return upon capital invested in an annuity at certain ages in America and in Great Britain. For the purpose of comparison, the fifteen largest United States' and Canadian companies which write annuities, and the fifteen largest British com-

¹ In practice, this extended method of computation is not actually required, since mathematical short-cuts have been developed which greatly facilitate the actuarial calculation. The final results of the short method, however, are identical with those obtained by the extended process described.

panies which write annuities, have been selected and the rates of each group of companies averaged. The average, together with the highest and lowest return under the given ages are shown in the following table:

TABLE SHOWING COMPARATIVE RETURNS ON AMERICAN AND BRITISH ANNUITIES

Age		MALE		FEMALE	
		15 American companies	15 British companies ¹	15 American companies	15 British companies ¹
40	Lowest	5.40	5.41	5.29	5.21
	Average	5.83%	5.88%	5.53%	5.56%
	Highest	6.29	6.21	6.08	5.85
50	Lowest	6.57	6.61	6.22	6.13
	Average	7.03%	7.14%	6.51%	6.59%
	Highest	7.58	7.46	7.07	6.82
60	Lowest	8.55	8.75	7.89	7.78
	Average	9.21%	9.41%	8.31%	8.36%
	Highest	9.87	9.63	8.83	8.58
70	Lowest	11.91	12.80	11.39	11.33
	Average	13.27%	13.73%	11.94%	12.14%
	Highest	13.85	14.00	12.47	12.35
80	Lowest	17.76		16.57	
	Average	19.35%		17.60%	
	Highest	22.47		20.20	

¹ The rates of the British companies, as usually published, provide for the payment of the annuity in half-yearly installments and for the payment at the death of the annuitant, of such proportion of the annuity payment as may have accrued up to the date of death. In order to place the comparison of the two sets of rates upon the same basis, the British figures were "corrected" by means of the British Offices' annuity tables with $3\frac{1}{2}$ per cent interest.

The two uniform characteristics indicated by this table are:

(a) That the return is greater to male than to female annuitants. This characteristic flows from the indisputable fact that the vitality of female annuitants is superior to that of male annuitants.

(b) That the average return is less in the American than in the

British companies. This characteristic probably results from the fact that the American annuitants are longer lived than British annuitants.

ANNUITIES MOST POPULAR AT THE OLDER AGES

A casual inspection of the foregoing table explains at once why it is that few annuities are sold at the younger ages. The percentage return at these ages is not sufficiently in excess of the return upon funds invested through the regular channels to induce prospective annuitants to hazard the loss of a considerable portion of their principal by investing in an annuity. At the older ages, however, where the return exceeds say 8 per cent, the annuity makes its greatest appeal. In no other manner can a sum of money be invested to yield an absolutely certain life income of so large an amount. It is true that there is a possibility of death before the principal, together with a normal rate of interest, may have been returned to the annuitant. But this possibility of loss is in the nature of a premium which the annuitant pays to insure the receipt of a guaranteed life income, perhaps several times the amount that could otherwise be obtained from "gilt edge" investments.

Annuities have reached their greatest development in older, longer established countries where there are large accumulations of capital and where interest rates are relatively low. Pioneer countries, where available capital is urgently needed for development of their resources and where the return upon investments is correspondingly large, know little of annuities. For this reason, America has had less experience with annuities than has Great Britain. It will be interesting to note the effect of the war upon the annuity situation. If the accumulation of capital in the warring countries shall continue to be depleted and if the rate of interest after the war shall rise, as seems probable, there will exist a double influence tending to retard the annuity business of the European companies.

A rising interest rate will of course make itself felt in this country but it is hardly likely that the reaction upon annuities will be so pronounced here, as in Europe. It may even be completely neutralized by the presence of larger accumulations of capital arising out of our present prosperity.

LIBERATION OF CAPITAL FOR PRESENT USE

An important, but less well known, application of the annuity is to the problem of liberating for the urgent needs of the present, capital that would otherwise be held invested because of the income it produces. An excellent example taken from the literature of a company that has made a specialty of the annuity business, will serve to make this application clear:

A father, 69 years of age, had two sons, one a lawyer, age 27, and the other a doctor, age 29. Each was struggling to build up a practice in London. The father realized that his boys were then more in need of financial assistance than they were likely to be in later years after he had passed away. His income, about £400 a year, derived from investment of £12,000, was just sufficient to meet his own requirements. If he gave his sons any of the capital he reduced his own income. He solved the difficulty by purchasing an annuity of £400 payable £100 a quarter. This cost him about £3,184 of his capital. The balance of £8,816 he equally divided between his sons, enabling the doctor to move to Harley Street, and the lawyer to secure a remunerative partnership.

It is safe to predict that the application of the annuity thus to liberate funds for present application that would otherwise be held invested until the death of the benefactor, will become more extensive as the public becomes familiar with the possibilities offered by the annuity contract.

ANNUITANT MORTALITY

Annuitants are proverbially long-lived. The reasons therefor are not far to seek. In the first place, only those who feel assured of a good chance of living to old age are likely to apply for annuities. This self-selection on the part of annuitants is marked. It is indicated by the fact that the mortality among a group of annuitants who have recently purchased their contracts is much lower than the mortality among a group of annuitants of the *same age* who have held their contracts for a longer period.

A similar phenomenon occurs in the field of life insurance where the applicants for insurance policies are medically examined before acceptance. It is found that the mortality among policyholders who have recently become insured is lower than the mortality among policyholders of the same age who have been insured for a longer period. There is no medical examination required of the prospective annuitant, but his "self-selection" produces the

same kind of effect as does a rigid medical examination of the prospective insurance policyholder.

In the second place, the condition created by the very existence of the annuity tends to the longevity of the annuitant. The annuity eliminates all worry as to the safety of the investment. At best, the man or woman who is solely dependent upon the income from invested funds cannot be free from anxiety as to the safety of the income or of the principal. There is always a possibility of loss from trade depressions, labor crises, war or rumors of war. When an investment is made in an annuity in a well-established company, the income is rendered as secure as it is humanly possible so to do. A great financial institution guarantees the payment of that income, and there is the additional safeguard that the state governments create departments whose duty it is to supervise the companies and to conserve the interests of all who hold their contracts. The entire absence of anxiety is one of the factors tending to the extraordinary longevity of annuitants.

One striking characteristic, invariably shown, is that female annuitants possess vitality superior to that of male annuitants. It is on this account that an annuity on a male life costs less than a similar annuity on a female life.

Another characteristic of annuitant mortality is that, with but slight exception, each successive mortality table that has appeared, has shown a decrease in the mortality rates. This is particularly true of the tables based upon female annuitants. Under life insurance contracts, an improvement in vitality is a source of gain, since every death claim deferred provides opportunity for premium and interest income to build up the fund with which the claim will ultimately be met. In the case of annuity contracts, however, the improvement in vitality is a source of loss against which the companies must carefully safeguard themselves.

The British government, which sells annuities in connection with the national debt, made a costly error at the inauguration of its annuity transactions. One of the earliest of the mortality tables to come into general use was the Northampton Table, published in 1783. This table was adopted by at least one life insurance company as a basis for computing insurance premiums and owing to the high rates of mortality shown by the table, the insurance contracts yielded the company a handsome profit. Because of the

prestige thus gained for the Northampton Table, it was adopted as a basis of calculation when the British government undertook the sale of annuities. The result was a heavy loss, since the high rates of mortality produced exactly the opposite effect under the annuities from what they had produced under the life insurance contracts.

In discussing the annuity rates of American and British companies, mention was made of the fact that the rate of mortality is higher among British annuitants than among American annuitants. This result may possibly be attributed to a greater salubrity of the climate in America. Or it may be attributed in some measure to the fact that in Great Britain, annuities are frequently purchased under the terms of wills, so that there is less opportunity for self-selection on the part of the annuitants. It is claimed that a larger proportion of inferior lives is therefore included among the British annuitants than is the case in this country where most of the annuity business arises from those who voluntarily purchase their own annuities.

Apropos to the subject of annuitant mortality, it is interesting to note that a few companies have adopted the plan of selling annuities on more favorable terms to those who, upon medical examination, are found to be in impaired health. This practice opens up an extensive field for development. In particular, it affords opportunity for the physician to exercise his skill in appraising the life risks presented for his judgment.

ANNUITIES WITH PARTICIPATION

Within the last two years, an eminent actuary, not directly connected with any life insurance company, has urged that insurance companies operating on the mutual plan should allow annuity contracts to participate in the surplus that may be derived from the annuity business. He claims that the granting of participation would do much to popularize annuities and to enable them to render a more extensive service than is now the case. The problem is interesting, and has occasioned much discussion among the actuaries of the companies. As yet, it can hardly be stated that a final decision has been reached. It will, however, be of interest to review some of the non-technical aspects of the case.

In the first place, it is generally conceded that there is no sound reason why a company operating on the mutual plan should deprive

annuitants of any annuity surplus which can with safety and with satisfaction to the annuitants, be distributed among them. As a prerequisite, however, it is essential that annuity premiums should be adequate to meet all claims and expenses pertaining to the annuity group and at the same time to provide a reasonable margin of safety to guard against unforeseen contingencies. It is a sound principle that the annuitant group in an insurance company should be financially sufficient unto itself. Not to make adequate provision to that end, would be to inject an element of injustice into the operation of the company.

In order to compute annuity premiums, the companies adopt a conservative rate of interest and a mortality table that, so far as can be foreseen, will not *understate* the vitality of the annuitants. But in this choice of a conservative mortality table there is the difficulty that, with but slight exception, each successive annuitant table that has been published has indicated an improvement in the vitality of annuitants. It is doubtful, therefore, whether any existing table correctly measures the vitality of *future* annuitants. Since an improvement in the vitality of annuitants is a source of loss, it is of prime importance that a margin of safety be included in the annuity premium to guard against abnormal longevity.

One of the means by which this margin of safety may be obtained is through the assumption of a relatively low rate of interest, say $3\frac{1}{2}$ per cent, when in reality a higher rate, say $4\frac{1}{2}$ per cent, may reasonably be anticipated. No actuary would voluntarily choose this method for the scientific computation of the desired margin of safety. But he has been practically forced to adopt the method by the state laws which compel the computation of annuity reserves upon the basis of an interest rate not exceeding $3\frac{1}{2}$ per cent. This condition at once suggests that the laws should be changed and that the official valuation rate of interest should be increased. Undoubtedly this change would constitute a step in the right direction, since it would permit of the scientific computation of the margin of safety. Annuity premiums computed in this scientific manner would probably differ from the rates now in use, but it is doubtful whether the change would result in a *uniform lowering* of the premium. It would probably result in an increase at certain ages and a decrease at other ages, but in a manner such that the aggregate annuity premiums received by the

companies would differ but slightly from those now received. This belief is strengthened by the testimony of several companies who have carefully investigated their annuity experience, to the effect that through a series of years the gain arising from the realization of an actual interest rate considerably above that assumed in the premium computation, has been counterbalanced by a loss arising from the superior vitality of the annuitants.

Assuming, however, that sufficient interest surplus will arise from annuity contracts to justify their participation therein, in what manner shall the distribution be made? Since the annuity reserve upon which the interest is earned, decreases with the lapse of time, the interest surplus will, generally speaking, likewise decrease. A decreasing dividend, however, finds little favor with the public, and therefore it has been suggested that each surplus distribution should be translated into a uniform increase of the regular annuity payment rather than be paid in a cash sum. This suggestion is not impossible of application, but its complete consideration would lead us far afield into a maze of actuarial symbols.

Another problem still more puzzling than the most satisfactory manner of distributing interest surplus, is that pertaining to the distribution of any mortality surplus which may be realized. To whom shall mortality surplus be apportioned? Certainly the surplus has not been contributed by those who have lived. It has been contributed by those who have died prematurely. Should the distribution therefore be made to the living, or to the estates of the deceased? Each point of view has its advocates. Some argue that a distribution among the living annuitants will tend to popularize annuities, and they relegate to a minor position, the argument that the living annuitants are the very ones who have contributed nothing to the mortality gain. They further attempt to support their position by the pseudo-analogy from the realm of life insurance, that the losses arising from the excessive mortality among insurance policyholders fall upon the living who have not caused the loss. Others contend that, wherever possible, gains and losses should be allocated to the sources from which the gains or losses arise, and that therefore the annuitant who invests in an annuity and dies prematurely is entitled to have any resulting surplus returned to his estate.

Enough has been said to raise the question whether the dis-

tribution of surplus among annuitants would, after all, prove so satisfactory that annuities would greatly increase in popularity. But even if an entirely satisfactory method of distribution were available, the question at the present time is largely academic, since in most instances, the companies believe that their annuity premiums are barely more than adequate on the present basis. If they were to render their annuities participating, it is extremely doubtful whether they would do so without raising their rates.² And it may be seriously questioned whether the grant of participation, coupled with an increase in rates, would render annuities more attractive to the public.

It has been urged that if the companies would vigorously push the sale of annuities there would be less to fear from abnormal longevity of the annuitants. We have already made reference to the self-selection exercised by annuitants in their purchase of annuities, but it is undoubtedly true that if the annuity business could be greatly extended there would be less to fear from this self-selection and therefore less risk of adverse mortality experience. At the same time, vigorous endeavors to sell annuities involve larger commissions to the agent, and provision therefor must be included in the premium.

² For the benefit of the technical reader, the following table has been prepared showing the percentage return on annuities in the 15 American companies, taken from the former table on page 23, and also the return upon annuities computed on the following basis: (1) $4\frac{1}{2}$ per cent interest, (2) McClintock Annuitant Tables modified on the select and ultimate principle by the percentages 30, 50, 65, 80 and 90, (3) loading 5 per cent of the gross rate. The net premiums on the above basis were obtained by a third-difference interpolation formula from the table on page 281, of Vol. 16, of the *Transactions of the Actuarial Society of America*.

Age	MALES		FEMALES	
	Average 15 companies,	McC. $4\frac{1}{2}$ % modified,	Average 15 companies,	McC $4\frac{1}{2}$ % modified
40	5.83%	6.47%	5.53%	5.98%
50	7.03	7.56	6.51	6.91
60	9.21	9.51	8.31	8.55
70	13.27	13.09	11.94	11.55
80	19.35	19.75	17.60	17.10

It is evident from this tabulation that the margin of safety in the premiums now in use by the companies is not excessive. Since the interest assumed in the computation of the specimen rates is $4\frac{1}{2}$ per cent, the margin of safety depends almost entirely upon the precarious mortality element. It is not difficult to understand why the companies are loath to jeopardize that margin by granting participation without simultaneously increasing their rates.

In other words, the tendency toward a lowering of the premium might be largely offset by the provision for the larger commission required to popularize annuities, to such an extent that the mortality rate would be sensibly increased. The whole problem is complex, and the paths have been so little trodden that it is doubtful whether the companies will see their way clear to grant participating life annuity contracts. Their hesitation does not arise from any desire to deprive the annuitant of anything that is rightfully his. It is due to an honest doubt whether participation can, without loss, be granted under circumstances that will be of real benefit to the annuity business as a whole.

VARIATIONS OF THE REGULAR ANNUITY

Thus far we have confined our discussion to the regular life annuity. Before leaving the subject, however, mention should be made of the so-called "complete" annuity. Under the regular annuity, the last of the periodical payments is made on the regular payment date immediately preceding the death of the annuitant. Under the complete annuity, such proportion of the annuity payment as may have accrued up to the date of death is paid to the estate of the annuitant. This feature is included regularly in the annuities of but four of the large American companies, whereas it is very generally included in the annuities of British companies. Many annuitants prefer the complete annuity, since it provides a fund at death that will assist in the payment of indebtedness that may have been incurred subsequent to the last regular annuity payment. The complete feature increases the price of the annuity, particularly at the older ages, and in making comparison between the rates of different companies, care should be taken to investigate whether the annuities are alike in this respect.

Another variation of the regular annuity provides that if the annuitant dies before the annuity payments have amounted to the purchase price, the balance will be paid to the annuitant's estate. It follows, of course, that the premium for an annuity of this nature is greater than for an annuity without the return-premium feature.

THE JOINT LIFE ANNUITY

The joint life annuity is an extension of the annuity principle to cover a status involving the continuance of more than one life.

A typical illustration is that of an annuity payable as long as either a husband or wife shall live. In actual practice, annuities involving more than two lives are seldom issued, though the actuary is prepared to compute rates for practically any combination that may be devised.

THE DEFERRED ANNUITY

An annuity of much value is the deferred annuity. The first payment under this annuity is deferred for a period of years, say to the end of the annuitant's income-earning period. It may be purchased by a single premium or by a series of premiums. Upon the death of the annuitant the contract terminates. For an additional premium, provision may be made for the return, upon the death of the annuitant, of such part of the premiums as may not have been returned in annuity payments.

The deferred annuity is particularly adapted to men and women, without present or prospective dependents, who desire to provide during their income-earning period against possible dependency in old age. There is no more economical manner in which this provision may be made; though it is essential if there be dependents, that the deferred annuity should be supplemented by additional provision for their support. To meet this latter contingency, contracts involving both the annuity principle and the insurance principle have been developed.

THE REVERSIONARY ANNUITY

One of these combination contracts developed to meet the demand for a method of protecting a dependent in the event of the death of the breadwinner, is the reversionary annuity which provides for the payment of a life annuity to a beneficiary commencing upon the death of a designated person known as the insured.

For example, a son may employ the reversionary annuity to insure a life income to his mother, should she outlive him. The contract may be paid for by a single premium or by a limited number of annual premiums, continuing, however, only so long as the mother and son both live. Upon the death of the son, the annuity payments to the mother commence. Should the mother die before the son, the contract terminates and all premiums paid are forfeited.

Where there is a considerable difference in the ages of the insured and beneficiary, the reversionary annuity renders its greatest service, and under these circumstances it is well adapted to the protection of the older of the two lives in the event of the death of the younger. Where the ages are more nearly equal, however, or where the beneficiary is younger than the insured, the reversionary annuity possesses many weaknesses.

In the first place, it is the experience of all life insurance companies that the beneficiary originally designated under a contract is frequently not the beneficiary who finally receives the benefits under the contract. The original beneficiary may die and be replaced by another, or may be changed because of completely altered conditions. Under the reversionary annuity the beneficiary cannot be changed. If the original beneficiary dies, the contract falls, and another beneficiary cannot be substituted. The inconvenience caused by this condition is intensified by the fact that reversionary annuities are issued only upon medical examination of the person upon whose death the annuity is to commence. It is therefore impossible to enter into a new contract with a new beneficiary, without submitting again to medical examination; and it is obvious that the health of the insured may have deteriorated to such an extent that he will not be accepted by the company.

In the second place, the reversionary annuity fails to make adequate provision for dependents, as for example children who may be living at the death of the insured, but who were not included in the original contract. If a man should protect his wife by a reversionary annuity and upon his death should be survived by the widow and by one or more children, the children would receive benefit from the annuity, only during the lifetime of the mother since the payments would cease immediately upon her death.

In the third place, the reversionary annuity, as commonly issued, makes no provision for the old age of the insured himself. If a man should designate his wife as the beneficiary under a reversionary annuity, and should reach old age with insufficient resources to render him independent, his wife would suffer with him, since the annuity feature of the contract becomes operative only upon his death. This weakness of the reversionary annuity would be removed if, in addition to paying a life annuity to the beneficiary upon the death of the insured, the contract were enlarged by the

inclusion of a deferred annuity feature to provide for the payment of a life annuity to the insured to commence when he attains a given age, say age 60 or 65. But even with this enlargement, the contract would be weak in that the beneficiary could not be changed and in that those dependent upon the insured who were not beneficiaries under the contract would be left in a precarious condition upon the death of the insured.

In the fourth place, if it should be desired to terminate the contract the reversionary annuity possesses no cash surrender value.

THE MONTHLY INCOME POLICY

The analysis of the reversionary annuity leads to the consideration of a modified form of the same contract—the monthly income policy. The monthly income policy remedies in large measure the weakness discovered in the reversionary annuity. In the first place, the income payable upon the death of the insured under a monthly income policy is payable monthly for a fixed number of years certain and thereafter during the remaining lifetime of the beneficiary. By the phrase “fixed number of years certain” it is meant that when the income becomes payable by the death of the insured, the income during the so-called “period certain” is guaranteed irrespective of the life of the beneficiary. On this account, it is possible to change, *ad libitum*, the beneficiary who shall receive the “income certain”; and as the “period certain” is frequently twenty years, the privilege is a valuable one. The income payable after the expiration of the period certain is usually payable only during the lifetime of the beneficiary originally designated. The monthly income policy therefore solves in large degree, the difficulty inherent in the reversionary annuity contract, that the beneficiary cannot be changed. There still remains, however, the difficulty in changing the beneficiary who shall receive the life income after the period certain has expired.

Another immense improvement of the income policy upon the reversionary annuity is that it protects any children who may be living at the death of the insured. The fact that the income is payable certainly for say twenty years, insures that the children will receive an income until they have acquired an education and have become self-supporting.

Furthermore, the monthly income policy possesses a cash surrender value based upon insurance value of the income payable during the period certain; whereas, as we have noted, the reversionary annuity makes no provision for cash surrender.

The most complete form of monthly income policy adds to the one just described, a further provision under which the income commences upon the insured's living a specified number of years, or say to age 60 or 65. In this event, the income is paid to the insured during his remaining lifetime, and after his death to the beneficiary, with a guarantee, similar to the foregoing, that payments for a period certain will be made if both the insured and beneficiary die during the period. If the insured dies before the date when his income is due to commence, the income is paid to the beneficiary for life, with the guarantee of the income for a period certain. This contract is adapted to furnish complete protection to a husband and wife, and also protection, during minority, to any children living at the death of the insured or at the time the income to the insured commences.

The premium for each of these monthly income policies depends upon the age of the insured and of the beneficiary. If the policy is paid for by periodical premium payments, the additional premium charged for the life income to the beneficiary beyond the period certain, is discontinued upon the death of the beneficiary during the premium-paying period.

AN ILLUSTRATION

A concrete example will serve to illustrate the great service rendered by the last described monthly income policy. Take the case of a husband and wife aged 35 and 30 respectively. The first provision the husband desires to make is for the protection of his wife and children should he die prematurely, say before age 65. The policy therefore stipulates that if the insured dies within 30 years, a monthly income of say \$50 will be paid to the widow as long as she shall live, with the guarantee that whether she lives or not, at least 240 monthly payments of \$50 each—that is, \$12,000 in all—will certainly be paid. This guarantee, covering the period certain, will furnish an income during the minority of any children living at the death of the insured. The second provision the husband desires to make is for a monthly income payable during the old age of

his wife and himself. The policy therefore stipulates that if the insured lives 30 years, a monthly income of \$50 will thereafter be paid to him as long as he shall live and then upon his death to his wife as long as she shall live, with the same guarantee as before, that 240 monthly installments of \$50 each will certainly be paid, whether or not the insured or his wife lives to receive them. According to the rates of a company which issues this policy, the annual premium therefor on the basis of a monthly income of \$50 is \$341.10. This premium is payable for 30 years, or until the prior death of the insured, and will be reduced each year by the annual distribution of surplus. If the beneficiary dies during the premium-paying period, the yearly premium will be reduced to \$297.45, which in turn will be reduced as in the previous instance by the annual distribution of surplus.

THE MONTHLY INCOME OPTION IN MODERN LIFE INSURANCE POLICIES

The most flexible adaption of the annuity principle to the needs of the public is the provision in many life insurance policies whereby the proceeds of the policy, when the policy becomes a claim, may be paid to the beneficiary in the form of a monthly life income, the amount of which is determined by the age of the beneficiary at the time the proceeds of the policy become payable. There is usually a provision that the income shall continue for a period certain, say 10 or 20 years, whether or not the beneficiary lives to receive the income payments. The difference between this policy and the monthly income policy, is that the premium provides for the payment of a definite cash sum, which when it falls due may be applied to purchase a life income, the amount of which will depend upon the *then attained* age of the beneficiary, whereas the premium charged for the monthly income policy takes into account the age of the beneficiary *at the time the policy is issued* and provides for an income to the beneficiary of a fixed amount, without reference to the age attained by the beneficiary when the policy becomes a claim. The regular insurance policy admits of complete freedom as to change of beneficiary whereas, as we have seen, the monthly income policy, in this respect, is somewhat restricted.

The income provision, either in the monthly income policy or in the monthly income option, is one of the most important develop-

ments during recent years in the insurance field. The provision guarantees that the insurance money left to the beneficiary will actually accomplish what it is intended that it should accomplish. The life insurance companies know only too well how frequently the proceeds of policies are lost through unwise investment; how frequently the beneficiary becomes a prey of the speculator who paints glowing pictures of tremendous profits. The monthly income provision is an "insurance of the insurance." It renders certain that the prime object of the insurance will be realized, namely, the protection of the beneficiary after the death of the breadwinner.

CONCLUSION

The annuity principle is rapidly becoming more and more a vital factor in our social system. Whether it be purchased by a single premium and be in the form of an income to commence a month hence, or whether it be purchased by a series of yearly premiums and be in the form of a life income to commence upon the happening of some future contingency, as, for example, the death of the breadwinner, the annuity method is the surest method by which anyone can be provided with a guaranteed life income. Incidentally, it is the method which will provide the maximum guaranteed life income for the outlay of a given sum.